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ORIGINAL RESEARCH

University foodservices' potential for providing environmental education to students

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Abstract
Aims: University foodservices are potentially well placed to foster environmental education in a non-classroom setting and so could have the power to benefit communities through producing environmentally literate graduates. Buy-in from foodservice staff is critical for realising this potential, so understanding what foodservice staff think about their foodservice engaging in the provision of environmental education is essential. The aim of this study was to identify the dominant perspectives held by university foodservice staff about the desirability and realities of fostering environmental education in their workplaces.
Methods: The study design integrated two phases: (i) 36 foodservice staff conducted a card-sorting activity that revealed four dominant viewpoints; (ii) 60 foodservice staff completed a survey where they identified with one of these viewpoints. The study was conducted in Dunedin, New Zealand.
Results: The four main perspectives were The 'Believer', the 'Relatively Positive Integrator', the 'Uncertain Contender' and the 'Sceptic'. All of the perspective groups, except for Sceptic, believed environmental education in their workplace was desirable. In the survey, 25% of the 60 participants self-identified with the Believer narrative, 40% with the Relatively Positive Integrator, 25% with the Uncertain Contender and 10% with the Sceptic. There were no significant differences between factors for sociodemographic characteristics.
Conclusions: A paradigm shift in foodservice framework thinking could unlock the potential university foodservice has to assist universities whose strategic mission is to embed environmental education in both curricular and co-/extracurricula activities.

Key words: environmental education, foodservice, perspective, Q methodology.

Introduction

The way we eat plays a major role in the future of the food systems we rely on today. The American Dietetic Association acknowledges the important role dietitians have to play in advocating for healthy lifestyles that contribute to the care of our environment.[1] Sustainability means capable of being maintained over the long term and meeting the needs of the present without compromising the ability of future generations to meet their needs.[2,3] Eating a sustainable and healthy diet is an important part of living a sustainable lifestyle. In the past decade, universities around the world have made commitments to include sustainable practices campus wide. They have also implemented initiatives to teach their students to do the same by integrating environmental education.[4] Environmental education is a 'multidisciplinary approach to learning that enables individuals to contribute to maintaining and improving the quality of the environment'.[5] Universities have predominantly taught environmental education through the classroom.[6,7] One limitation of this classroom-based learning approach is that in order for students to have exposure to environmental education, it needs to be interwoven into every department's curriculum.[6–8] The Higher Education Funding Council for England (HEFCE) guidelines encourage both extracurricular and curricular-based activities to support a university to foster environmental education.[9] Extracurricular initiatives help enhance curricular-based activities by giving students the opportunity to actively participate in what they are learning.[10,11]

University foodservice, as an extracurricular element to student life, could provide an additional platform for effective environmental education delivery. In the past, foodservice operations have provided nutrition education to help increase their consumers' nutrition literacy.[12] Similarly, university foodservice has the potential to teach university students about how to care for the environment. The foodservice plays a major role in the future of the planet. University foodservices produce nearly 54 million tonnes of edible and non-edible food waste each year.[13] Also, producing some basic ingredients requires more water and CO_2

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than others, for example, beef production requires up to 20 times more water than growing legumes.[14] Foodservices in general use 250 000 Btu per square foot, which is more than 2.5 times the energy used by other energy-consuming activities in a building.[1] In order to ensure the successful implementation of environmental education initiatives within university foodservice, it is necessary to understand foodservice staff perceptions about the desirability and the reality of environmental education in their foodservice.[15–17] While previous studies from the USA and New Zealand have shown a gap in knowledge about what motivates foodservice managers to integrate sustainable practices,[18–20] there has been no academic discussion surrounding university foodservice staff attitudes towards environmental education as a goal of a university foodservice. Understanding stakeholder perspectives is an effective step that will give direction to implementing environmental education in university foodservice. This study investigated the foodservice staff perspectives regarding the effectiveness and barriers of using an extracurricular approach to teaching environmental education in a university foodservice.

To meet the aim, this study asked the question: what are university foodservice staff perspectives on the desirability and realities of including environmental education in the foodservice they work in?

Methods

The University of Otago Ethics Institutional Review Board approved the study protocol, and all participants provided written informed consent. The study included a two-phase design. Q methodology was used to find the perspectives held by university foodservice staff about the desirability and realities of fostering environmental education in their workplace.[21] Q methodology is a mixed methods approach using qualitative and quantitative analysis to measure participants' perspectives on a specific topic.[21] Q methodology does not aim to prove a hypothesis. Rather, it helps researchers to discover perceptions, which can then provide a platform for further research.[22,23] In order to expand on the findings from the Q methodology study, a second phase was included in the form of a nationwide survey. The purpose of the survey was to find the prevalence of perspectives identified in the Q methodology study and to see if the perspectives could be profiled by sociodemographic characteristics, such as age, gender and type of job position. The primary author collected the data and analysed the results in collaboration with the other two authors who had supervisory roles in the project.

Phase I: Q methodology

A total of 36 participants were recruited from the University of Otago retail food outlets and residential hall foodservices. A purposeful recruitment method was used to select a variety of foodservice staff from different roles and types of foodservices around the university.

The researcher presented each participant with 42 statements and instructed them to sort the cards on a continuum of agreement from 'most agree' to 'least agree'. Statements were purposefully selected from a range of sources (academic literature, interviews and grey literature) to represent a broad range of perspectives on the topic. The statements and interview protocol were pilot tested by two participants, purposefully selected by the researcher, who were working in university foodservice. Both pretest participants clearly understood the instructions and the statements.

During the card-sorting activity, participants were also asked to base their agreement on how desirable and realistic each statement was to them. At the start of each card-sorting activity and interview, the participant consented to take part in the research and for the researcher to audio record their interview. Each participant sorted the statements on a 42-square grid, with a scale ranged from –5 (least agree) to +5 (most agree). Directly after each participant sorted the cards, the researcher conducted a semi-structured interview asking the participant their reasons behind their card placement.

In the study, the card-sorting activity took place predominantly at the participant's place of work, such as the dining room of the residential hall or the seated area of a café. The same researcher conducted all of the 36 interviews. The card-sorting activity and interview took approximately 30–40 minutes; most interviews finished under 10 minutes. Participants were purposefully recruited with permission from their managers. The researcher had previous work and study relationships with some of the participants as she had previously worked and had complete previous workshops at a residential hall included in the study.

The researcher entered all statements and codes manually into the PQ method computer software. PQ method collates all the information and links similar assortment patterns to create assortment groups (factors). A Centroid analysis was conducted, whereby factors were rotated to increase the purity of saturation. After rotation, the significant factor loading of 0.4 resulted in five factors; two were discarded as they were not significant (where a Q sort is loaded onto more than one factor). The significant factor loading was increased to 0.41 to refine the factors further. Three to four factors were desired for simplicity and less respondent burden. Also, fewer factors were more favourable as factors are understood better when there is a smaller number.[24] The factors represented 51% of the differences between the sorting patterns of participants found in the data. Watts and Stennor recommend that factors should explain upwards of 35–40% of the data, so the four factors were kept.[22] A data sheet was produced in the final stage of the PQ method program that was used to create factor arrays for each factor (a Q sort that represents the perspective for a factor). The results of the thematic analysis of the distribution of statements particular to each perspective, as well as of the post-sort interview material, helped to create a narrative to represent each perspective. Participants who

were most significantly matched to a perspective validated each narrative.

Phase II: Survey

A total of 60 participants from five universities in four different locations (Dunedin, Christchurch, Wellington and Auckland) were recruited to take part in a survey. The researcher did not wish the universities to represent a region, rather to collect data from a variety of university foodservices from South and North island regions. A total of 60 participants were included in the study as the value was suitable to find statistical significance. A foodservice manager from each university was contacted and sent an email inviting their staff to the study. Desired participants could have any role within a university residential hall or university retail food outlet. The email contained consent and information sheets as well as a link to the survey. Survey participants received one email that contained survey information and one follow-up email that had been sent by the researchers to managers to forward to their staff. Two foodservice managers received printed surveys in the post, with a prepaid postage envelope to return completed surveys. As an incentive to partake, the researchers donated $1 to charity for every completed survey, and participants also went into a draw to win a $100 supermarket voucher. Participants completed surveys either during their work hours or at home. Participants were verified as the email containing the survey link was only sent out by managers to their staff.

The researchers created narratives that summarised each perspective. These narratives were included in the survey along with sociodemographic questions. In order for each participant to identify with a perspective, participants were asked how much they agreed with each corresponding narrative and which narrative they identified with the most. Participants were then asked a series of sociodemographic questions.

Data were downloaded from the Qualtrics online software into an excel spreadsheet. A *P*-value of 0.05 was considered significant for the results of the study. A one-way analysis of variance test was used to find differences in agreement with a perspective, and Fisher's test was used for the sociodemographic characteristic questions.

Results

Phase I

A total of 36 participants from seven residential halls and five campus food outlet foodservices at the University of Otago took part in the Q methodology card sorting and post-sort interview activity. The sociodemographic characteristics of the Q methodology study participants are outlined in Table 1.

Four dominant sets of perspectives emerged from the data and were named by the researchers as (i) The Believer, (ii) The Relatively Positive Integrator, (iii) The Uncertain Contender and (iv) The Sceptic. Figure 1 shows the assignment of the Q set statements to grid position. For each perspective, the researcher created a narrative that reflected the point of view in first person to represent each perspective's voice.

Table 1 Sociodemographic data of the Q-sort participants (n = 36): Gender, type of foodservice and job role

	Number of participants	*Percentage (%)*
Gender		
Male	17	47
Female	19	53
Type of foodservice		
Residential hall	19	53
Campus food outlet	17	47
Job role		
Manager	18	50
Staff member	18	50

The Believer perspective

Of the 36 participants, 15 significantly loaded onto The Believer factor, which had an eigenvalue of 9.72 and explained 27% of the study variance. They feel that living in a sustainable way is not their responsibility but everyone's responsibility (Figure 2).

The Relatively Positive Integrator perspective

Two participants loaded onto the Relatively Positive Integrator factor, which had an eigenvalue of 3.6 and explained 10% of the study variance. The Relatively Positive Integrator thought environmental education could not be prioritised over customer service, but it could be integrated into the overall aims of their foodservice, as evident in the narrative summary (Figure 2).

The Uncertain Contender perspective

Two participants also significantly loaded onto the Uncertain Contender factor, which had an eigenvalue of 3.24 and explained 9% of the study variance. The Uncertain Contender thought that environmental education was a good idea, but in reality, it seemed difficult to both meet expectations from higher management and foster environmental education, as is evident in the narrative summary (Figure 2).

The Sceptic perspective

Three participants loaded onto the Sceptic factor, which had an eigenvalue of 1.8 and explained 5% of the study variance. The Sceptic was not opposed to the idea of environmental education but thought that it would not integrate well into their foodservice model, as is evident in the narrative summary (Figure 2).

Statements	Grid Position			
	Believer	Relatively Positive Integrator	Uncertain Contender	Skeptic
1) Why cannot environmental education be parallel to the growth in customer service?	0	- 1	0	0
2) Fostering environmental education through my foodservice will help reflect the university as a place of academic excellence.	1	3	0	2
3) I think my foodservice should focus on consumer demand rather than environmental education.	-2	0	1	3
4) Our foodservice cannot reflect everything that our university advocates for.	-2	-1	0	1
5) A common misconception is that integrating environmental education costs more money.	0	-2	2	-3
6) Our university has some responsibility in bringing awareness to the environmental impact of the food it sells on campus.	4	2	1	-1
7) Environmental education can be woven into my foodservice corporate side to help improve its finance	-1	3	-1	-2
8) Customer service should underpin everything we do in my foodservice.	0	5	5	4
9) Staff should be paid more if they are involved with environmental education as it takes more effort to be more environmentally friendly.	-1	-2	-4	-2
10) Environmental education should stay within environmental science.	-4	-3	-5	1
11) My foodservice will lose money if it fosters environmental education.	-3	-2	0	-2
12) Student led initiatives could aid in the teaching of environmental education	1	0	3	2
13) We should be allowed to have non-environmentally friendly foods; we just should not promote them	-1	-4	1	0
14) Environmental education through my foodservice should be used in conjunction with other community initiatives.	3	1	-2	1
15) Everyone is responsible for environmental change, which includes our university and my foodservice.	5	4	4	-4
16) Environmental education needs to be taught through my foodservice because it's a part of everybody's future.	4	2	1	-4
17) We are a university foodservice. As such everything we do, whether it like it or not, acts as a role model for our students	3	4	0	1
18) Environmental education is political correctness gone mad and I don't think it we should foster it in my foodservice	-5	-4	-4	0
19) My foodservice can foster environmental education with the current sustainable practices that it uses at present.	0	0	-3	2
20) My foodservice has a big role to play in environmental education as it caters for a large and diverse student population	1	2	-1	0

Figure 1 Q set statements by grid position. Participants ranked statements on an 11-point scale where +4 or 5 represent 'strongly agree' and –4 or 5 represent 'strongly disagree'. 0 represents a neutral ranking of the statement ('neither disagree nor agree'). A centroid factor analysis was used to analyse the factor analysis and a Varimax rotation of the factors to find one factor individuals identified with.

21) Environmental education should be a top priority in the foodservice I work in.	2	1	-1	-3
22) My foodservice has some role to play in environmental education, as it is a service used by students.	2	1	1	-1
23) There are ways of working around health and safety policies to make room for environmental education.	0	2	0	-3
24) For the majority of students, the environmental impact of food is a major concern.	-1	-1	-3	-4
25) Environmental education would be limited in my foodservice as health and safety and financial income are greater priorities.	-1	0	4	1
26) Students have a varied amount of concern about the environmental impact of food.	1	1	2	5.
27) Environmental education is of less priority than financial and hygiene outcomes.	-1	1	4	4
28) Students are more concerned with the price of food rather than the environmental impact it has.	0	3	2	1
29) There is not one major aspect my foodservice needs to address environmental education but small changes gradually.	0	-1	2	0
30) Environmental education through my foodservice would just appeal to those who are already well environmentally educated	-2	-1	0	4
31) In order for my foodservice to foster environmental education it needs to 'practice what it preaches'.	3	1.0	1	0
32) Fostering environmental education through my foodservice could be effective if the right people were behind it.	2	0	1	0
33) The current foodservice system is too ingrained into our university culture that it cannot be changed to foster environmental education.	-3	-3	-1	3
34) Even if the right people were behind it, my foodservice would not be effective in fostering environmental education.	-2	-1	-2	-2
35) I do not think we should foster environmental education, as it would restrict freedom of choice.	-4	-4	-3	-1
36) Most students will have a good response to my foodservice providing environmental education.	1	4	0	-1
37) Our University needs to do more to teach environmental education.	4	0	3	-1
38) There is no need to teach environmental education at my foodservice.	-4	-5	-4	0
39) Environmental education should be mandatory in my foodservice.	0	-3	-1	-5
40) There will be a mixed bag of responses from students.	1	0	3	3
41) Environmental education would decrease the quality of produce in my foodservice.	-3	-2	-2	-1
42) My foodservice has some capacity to create a change on the environmental literacy of our students.	2	0	-2	2

Figure 1 *Continued.*

In summary, all of the perspective groups, except for Sceptic, believed environmental education in their workplace was desirable. The differences between the groups came from their perspectives on the realities of environmental education. The Sceptic was the most negative about how realistic environmental education could be. They felt

Believer

"I strongly agree that when it comes to environmental change, everyone has a responsibility to play a part. So I think my foodservice should also play a part by providing environmental education to students. The University should definitely do more to teach environmental education, yet I am undecided whether it should be mandatory in my foodservice. Environmental education is not a political agenda; it is a fact of life that I think we should all take on board. I do not think environmental education would restrict choice, although consumer demand cannot be ignored. I think we can educate so that the demand is in the environment's favour. I am happy to be a part of an educational programme."

Relatively Positive Integrator

"I strongly believe that in my foodservice our ultimate aim should be to meet customer needs. I think students will have a good response to environmental education in my foodservice and I believe that we are all responsible for environmental change, so there is a need to foster environmental education in my foodservice. I am on the fence about whether environmental education should be prioritized over financial and hygiene outcomes and unsure whether my foodservice should focus on environmental education at the expense of customer service. However, I think that environmental education might be able to improve the financial outcomes of my foodservice."

Uncertain Contender

"In my foodservice, customer service, financial and hygiene outcomes need to be top priority because at the end of the day you are running a business. So environmental education could be limited in my foodservice. In saying that, environmental education should not just stay in environmental science; we do have a responsibility to care for our environment. I am unsure whether our foodservice should act as a role model for students. I don't know much about the student response; I think there would be a mixed bag of responses. I think environmental education needs to be taught, but I feel a sense of struggle between integrating it and also meeting demands from higher management."

Sceptic

"I firmly believe that there would be a mixed response from students. Customer demand should guide our decisions, and I don't see a large demand from students. It would only appeal to those who already have concern about the environment. I strongly disagree about making environmental education mandatory in my foodservice, yet I am unsure whether there is a need for it in my foodservice. We are set up as a business and environmental education will most likely cost us more. Plus, the way we keep to hygiene standards needs to come first. I don't feel like we are responsible for environmental change as a foodservice. We produce food, we are not educators, and so I struggle to envisage how environmental education could be a top priority. I am not sure whether my foodservice is the best place for environmental education to occur."

Figure 2 Factor narratives.

environmental education would be unrealistic because it would negatively impact three main foodservice outcomes: customer service, financial accountability and hygiene. The Uncertain Contender also thought environmental education could have negative effects on financial accountability and hygiene. However, they were unsure of the customer response to environmental education. The Relatively Positive Integrator felt customers would have a good response but felt unsure about financial accountability and hygiene outcomes. In terms of perceived realities, the Believer sat at the opposite spectrum to the Sceptic as the Believer considered environmental education to be a realistic outcome for their foodservice.

Phase II

A total of 60 university foodservice staff took part in the survey (Table 2). While participants came from six out of eight New Zealand universities, 62% of the participants were from the University of Otago. A wide variety of ethnicities also participated in the study, with 20% of participants identifying themselves in the 'other' category (which included Fijian, South African, Australian, Filipino, Thai and African). Most participants came from residential college foodservices.

Table 3 outlines how many participants identified and agreed with each perspective narrative. A total of 15 participants identified with the Believer factor; 25 of participants identified with The Relatively Positive Integrator; 15 participants identified with the Uncertain Contender; and 6 participants identified with the Sceptic.

Also in Table 3, the scores for participant's agreement with each of the four narratives are shown, with most to least agree represented on a five-point scale from one to five. On average, all participants gave their identified perspective an agreeability score of between one and two.

Discussion

In phase I, most of the participants identified with the Believer and in phase II, the Relatively Positive Integrator. Although the majority identified with different factors in

Table 2 Sociodemographic characteristics of university foodservice staff included in the phase two survey

Characteristic	*Total: n = 60 n (%)*
Gender	
Female	34 (58)
Male	25 (42)
Ethnicity	
NZ European	40 (67)
Maori	4 (7)
Samoan	1 (2)
Chinese	2 (3)
Indian	1 (2)
Other	12 (20)
Age (years)	
18–24	11(19)
25–34	12 (20)
35–44	14 (24)
45–54	14 (24)
55–64	7 (12)
65+	1 (2)
Role in foodservice	
Food service manager	14 (23)
Chef/cook	14 (23)
Kitchen hand	14 (23)
Supervisor	8 (13)
Barista	1 (2)
Cleaning staff	9 (15)

the two phases, the majority shared a positive outlook on the desirability of environmental education in university foodservice. Our results show three of the four perspectives perceived environmental education as desirable. As 94% of survey participants identified with those three factors, this indicates that most foodservice staff found environmental education desirable. Importantly, however, only 25% of survey participants identified with the Believer perspective, which saw environmental education as both desirable and realistic. These results demonstrate university foodservice staff concerns about realistically implementing environmental education. Most notably, these concerns were about the potential negative impact on customer satisfaction, financial and hygiene outcomes.

Of the four perspectives, three were concerned about how environmental education would harmonise with other outcomes of their foodservice. There is evidence, however, that some university foodservices have been successful in implementing environmental education without disrupting foodservice outcomes and, in some cases, even improving them. Whitehair *et al.* found that using promotional posters could help reduce food waste.[25] The researchers used a poster to provide a 'simple, to-the-point prompt message' about food waste. The poster was successful in reducing food waste by 15%. Reducing food waste can help save university foodservices money, which will uplift financial accountability as an outcome. According to Chen *et al.*, the most favoured sustainable initiatives by foodservice staff in university foodservices are ones that save money.[15] Although, Chen *et al.*'s findings were specific to sustainable practices and not to environmental education initiatives, they are nonetheless insightful on one potential way to solve the current problem, that implementing environmental education seems unrealistic to foodservice staff. Initiatives that saved money could help convince staff that environmental education would aid in financial accountability rather than act as barrier against it. In order for environmental education to become more realistic, foodservices could focus on initiatives that will help save money.

Environmental education could also increase student healthy eating behaviours. Pelletier *et al.* found that students who had the most positive attitudes towards alternative food practices had a significantly healthier diet than those who had a less positive attitude (1.3 more servings of

Table 3 Scores from survey showing agreement with narratives by factor group

	Mean narrative score[e]				
	Believer[a] *(n = 15)*	*Relatively Positive Integrator*[b] *(n = 24)*	*Uncertain Contender*[c] *(n = 15)*	*Skeptic*[d] *(n = 6)*	P-*value*
Strength of agreement with each viewpoint					
How much do you agree with the Believer?	1.5	1.9	2.1	3[f]	0.001
How much do you agree with the Relatively Positive Integrator?	2.0	1.7	2.0	3.2[f]	0.005
How much do you agree with the Uncertain Contender?	3.1	2.6	1.6[f]	2.2	0.004
How much do you agree with the Skeptic?	3.8	4.0	2.4[f]	1.5[f]	0.000

[a] Believer narrative: Skeptic differed from all other factor groups ($P < 0.01$).
[b] Relatively Positive Integrator narrative: Skeptic differed from all other factor groups ($P < 0.05$).
[c] Uncertain Contender: The Uncertain Contender differed from the Believer and Relatively Positive Integrator ($P < 0.05$).
[d] Skeptic: The Uncertain Contender differed from the Believer and Relatively Positive Integrator ($P < 0.01$). The Skeptic differed from Believer and Relatively Positive Integrator ($P < 0.01$).
[e] Mean on a Likert scale of 1–5, where 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, and 5 = strongly disagree.
[f] Indicates the viewpoint that contributed to the difference between the groups.

vegetables ($P < 0.001$), more dietary fibre ($P < 0.001$) and fewer added sugars ($P < 0.001$)).[26]

Cortese *et al.* call for a change in the paradigm of thinking about how universities should teach environmental education, and Reid *et al.* express the need for a common language about sustainability in order to successfully teach environmental education.[7,10] All four factors expressed different languages about how realistic environmental education would be to implement in terms of their foodservice. This raises the question of whether university foodservices need a new framework to base their outcomes on. Unity is needed so that environmental education works seamlessly with the outcomes of a foodservice. If environmental education was seen as the Believers see it, then environmental education could be integrated in such a way that would not reduce the quality of other foodservice outcomes. Managers could motivate staff by finding a common positive perspective to initiate changes. Goonan *et al.* suggest a framework combination of the commonly used 'systems model' and 'social practice model' as a tool to introduce sustainable practices in a foodservice.[19] This combination approach may also be useful for introducing environmental education into university foodservice. The system-practice model allocates images, materials and skills to each component of the systems model. This method helps a foodservice manager to evaluate the perceptions about an initiative, the materials needed to start the initiative and skills required. For example, this method could enable a foodservice manager to integrate environmental education initiatives by tailoring the type of initiatives based on the feedback of their staff.

Although the Skeptics were the minority group, there is a chance this factor might be represented in some foodservices. To overcome these obstacles, the framework by Goonan *et al.*[19] could show Skeptics that financial accountability, hygiene and customer service outcomes can still be withheld.

Integrating Q methodology with a survey enabled the data to reflect differences between groups in a larger and more geographically diverse population, which added validity to the identified perspectives. This method has previously been successfully used to reveal the perspectives of foodservice staff about the possibilities of reducing food choice to improve the performance of college foodservices.[22] Researching perspectives about fostering environmental education in university foodservice should not stop with university foodservice staff. A main concern for three of the four factors was how environmental education initiatives would affect customer service. A limitation of this study was that it did not include the perspectives of the consumers of university foodservices. Students are ultimately the end users of any environmental education initiative, so understanding their perspectives would give new insights into how best to tailor initiatives that would benefit the consumer.

Adding to literature on how universities can teach environmental education campuswide rather than just in the classroom, this research shows that university foodservice does have the potential to act as a platform for environmental education. Environmental education initiatives will not just benefit graduates but also the communities they are a part of as graduates integrate sustainability into their professional and personal lives. Staff would also learn of sustainable practices to integrate into their foodservice. Although most foodservice staff perceived environmental education as desirable, they also shared perceived barriers. University foodservices could overcome these perceived barriers with a new foodservice framework that would turn those barriers into assets. Foodservices are potentially very powerful players in helping to shape the environmental educational learning experiences of university students.

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Conflict of interest

The authors have no conflicts of interest to declare.

Authorship

CS was the lead researcher responsible for conducting both the card-sorting activities and survey, the thematic analysis with PQ method software, interpreting and writing narratives of the factors, creating the national survey and analysing the survey results. MM was the primary supervisor, responsible for project conceptualisation and critical review. CT was the secondary supervisor.

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